UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/994,412	11/27/2001	Ulrich Certa	20787	7504

151 7590 04/04/2007

HOFFMANN-LA ROCHE INC.
PATENT LAW DEPARTMENT
340 KINGSLAND STREET
NUTLEY, NJ 07110

EXAMINER	
CHONG, KIMBERLY	
ART UNIT	PAPER NUMBER
1635	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/04/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	09/994,412	CERTA ET AL.	
	Examiner	Art Unit	
	Kimberly Chong	1635	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 January 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Application/Amendment/Claims

Applicant's response filed 01/16/2007 has been considered. Rejections and/or objections not reiterated from the previous office action mailed 09/06/2006 are hereby withdrawn. The following rejections and/or objections are either newly applied or are reiterated and are the only rejections and/or objections presently applied to the instant application.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-6 are pending and currently under examination in the application.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-6 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a process for inhibiting human aldolase gene expression and decreasing aldolase enzyme activity in cells *in vitro* after transfection with sense and antisense viral particles, does not reasonably provide enablement for inhibition of expression of any target gene in cells or tissues, in vivo, by administration of viral particles expressing a sense RNA strand and an antisense RNA strand. The specification does not enable any person skilled in the art to which it pertains, or with

which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

The instant claims are broadly drawn to a process for inhibiting expression of any target gene from any cell or tissue by administration of viral particles expression a sense RNA strand and an antisense RNA strand targeted to any cell or tissue. Further the claims recite the ssRNA strand is cloned into an alphavirus vector and the target gene is eukaryotic, viral or synthetic and the homologous nucleotide sequence is at least 50 bases in length and is specific for a target gene. Additionally, the claims recite the target gene is a developmental gene, an oncogene, a tumor suppressor gene or an enzyme.

The specification as filed discloses inhibition of human aldolase RNA in BHK cells infected, *in vitro*, with sense viral stocks and antisense viral stocks that are homologous to the human aldolase gene (see Example 4). The specification further discloses human aldolase enzyme activity was decreased in BHK cells that were infected, *in vitro*, with sense viral stocks and antisense viral stocks that are homologous to the human aldolase gene (see Example 5). Additionally, the specification discloses HEK293 cell proliferation was not inhibited after infection with sense viral stocks and antisense viral stocks that are homologous to the human aldolase gene *in vitro* (see Example 7).

There is no guidance in the specification as filed that teaches how to target the claimed viral particles expressing sense and antisense RNA to mammalian cells or tissues *in vivo* or inhibit the expression of specific target endogenous genes of

mammalian cells or tissues *in vivo*. Although the specification discloses inhibition of human aldolase RNA in BHK cells infected, *in vitro*, with sense viral stocks and antisense viral stocks that are homologous to the human aldolase gene, such a disclosure would not be considered enabling since the state of antisense and RNAi-mediated gene inhibition is highly unpredictable.

The following factors have been considered in the analysis of enablement: (1) the breadth of the claims, (2) the nature of the invention, (3) the state of the prior art, (4) the level of one of ordinary skill, (5) the level of predictability in the art, (6) the amount of direction provided by the inventor, (7) the existence of working examples, (8) the quantity of experimentation needed to make or use the invention based on the content of the disclosure.

The claimed breadth of claims 1-25 encompass a process for delivering a broad range of viral particles expressing any sense RNA and any antisense RNA homologous to any target gene via injection into a broad range of cells or tissue, *in vivo*, to inhibit a broad range of specific target genes in cells or tissues. Although the specification discloses inhibition of human aldolase RNA in BHK cells infected, *in vitro*, with sense viral stocks and antisense viral stocks homologous to a human aldolase gene (see Examples 4), this guidance is not sufficient to resolve the known unpredictability in the art associated with appropriate *in vivo* delivery provided by the instantly claimed methods.

The references cited herein illustrate the state of the art for therapeutic *in vivo* applications using antisense and RNAi. Green *et al.* states that "[i]t is clear from the

evolution of antisense technology from a laboratory research tool into a mechanism for designing active and effective drugs is far from complete. Although there is little doubt that systemically administered antisense [oligonucleotides] can inhibit the expression of specific genes in patients, the effectiveness of such therapy in modifying the course of a particular illness has not yet been established. In addition, toxicity in humans appears more problematic than might be predicted based on preclinical studies in rodents. Clearly, additional work must be done to unravel the complex problems associated with drug delivery, mRNA targeting and aptameric, nonantisense effects" (Antisense Therapy in Human Disease; Vol. 191, No. 1 2000, pg 103 column 2, of record). The problems with efficient delivery of antisense oligonucleotides to cells has been addressed by Jen *et al.*, who states that "[o]ne of the major limitations for the therapeutic use of AS-ODNS ...is the problem of delivery....presently, some success has been achieved in tissue culture, but efficient delivery for *in vivo* animal studies remains questionable (Stem Cells 2000; 18:307-319 pg 315 column 2, of record)." Jen *et al.* concludes that "[g]iven the state of the art, it is perhaps not surprising that effective and efficient clinical translation of the antisense strategy has proven elusive (see p 315, second column).

The state of the art for therapeutic *in vivo* applications for RNAi face similar hurdles as antisense as observed by Caplen (Expert Opin. Biol. Ther. 2003, 3(4): 575-586, of record) who states "[m]any of the problems associated with developing RNAi as an effective therapeutic are the same as encountered with previous therapy approaches. The key issues of delivering nucleic acids to the required tissue and cell

type, while ensuring an appropriate level of efficacy with minimum toxicity induced by the vector system, have been problems the gene therapy field has struggled with for over a decade now" (see page 581, last paragraph). Novina et al. (Nature 2004, Vol.430:161-164, of record) agrees that the "major obstacle to therapeutic gene silencing is the 'delivery problem'- the necessity of introducing short dsRNAs into specific organs" (see page 164, third paragraph).

Paroo et al. (Trends in Biotechnology 2004, Vol.22(8):390-394, of record) summarizes by stating "[d]eveloping siRNA for efficient gene silencing in vivo is likely to be more challenging and many issues must be addressed before use in animals can become routine. As with any compound, issues of adsorption, distribution, metabolism and excretion are significant obstacles. However, the duplex nature of siRNA introduced an additional layer of complexity. Even with the great progress that has been made, it is not clear whether or not siRNA possesses any advantages relative to traditional antisense oligonucleotides for in vivo experiments or therapeutic development. Crucial pharmacological and chemical challenges will need to be addressed before siRNA can fulfill its immense promise" (see page 393, last paragraph).

Although RNAi has been seen as the new magic bullet to silence genes, "...magic bullets need magic guns" (stated by William Pardridge as quoted by Adams in The Scientist (2005) Vol.19:Issue1, of record). Adams notes that researchers have struggled to get their therapies to particular targets and as stated by McCaffrey "[t]heir approach involves injecting large amounts of virus [vectors expressing shRNA] into the

tail vein of mice, or into an artery leading to the liver. Its efficient but probably isn't going to work for humans" (see page 2 The Scientist (2005) Vol.19:Issue1).

As outlined above, it is well known that there is a high level of unpredictability in the antisense and RNAi art for therapeutic *in vivo* applications. The scope of the claims in view of the specification as filed together do not reconcile the unpredictability in the art to enable one of skill in the art to make and/or use the claimed invention, namely delivery of a broad range of viral particles expressing any sense RNA and any antisense RNA homologous to any target gene via injection into a broad range of cells or tissue, *in vivo*, to inhibit a broad range of specific target genes in cells or tissues.

While one skilled in the art may be able to produce viral particles expressing any sense RNA and any antisense RNA homologous to any target gene, the specification as filed does not teach a process for delivering any viral particles expressing any sense RNA and any antisense RNA, to inhibit expression of any target gene from any cells or tissue.

Crooke (Antisense Research and Application, Chapter 1, Springer-Verlag, New York. 1998, of record) supports the difficulties of extrapolating from in vitro experiments and states on p. 3, paragraph 2, "extrapolations from *in vitro* uptake studies to predictions about *in vivo* pharmacokinetic behavior are entirely inappropriate and, in fact, there are now several lines of evidence in animals and man [that] demonstrate that, even after careful consideration of all *in vitro* uptake data, one cannot predict *in vivo* pharmacokinetics of the compounds based on *in vitro* studies [references omitted]."

In view of the unpredictability in the art of antisense and RNAi-based therapy, as outlined above, the specification as filed does not provide adequate guidance that would show how one skilled in the art would practice the claimed invention without undue experimentation.

Given the teachings of the specification as discussed above, one skilled in the art would not know *a priori* whether introduction of any viral particle expressing any sense RNA and any antisense RNA homologous to a target gene, *in vivo,* by the broadly disclosed methodologies of the instantly claimed invention, would result in successful inhibition of expression of a gene in any cell or tissue. To practice the claimed invention, one of skill in the art would have to *de novo* determine; the stability of the polynucleotides *in vivo*, delivery of the polynucleotide via vessel injection, specificity to the target tissue *in vivo*, dosage and toxicity *in vivo*, and entry of the molecule into the cell *in vivo* and the effective action therein. Without further guidance, one of skill in the art would have to practice a substantial amount of trial and error experimentation, an amount considered undue and not routine, to practice the instantly claimed invention.

The foregoing rejection is reiterated from the previous Office action filed 03/18/2005 because Applicant has amended the claims as originally filed to encompass *in vivo* treatment by deleting the phrase "*in vitro*" that was previously added in the claim amendments filed 06/22/2005.

It is applicant's position that the instant claims are enabled for the following reasons: Applicant states that data from *in vtiro* assays is sufficient to support a

therapeutic utility. Applicant further states " a utility established by infecting cells *in vivo* by viral infection (e.g., gene therapy). Thus, a utility established by infecting cells in culture *in vitro* clearly supports a reasonable correlation for its use in vivo and thus satisfies the enablement requirement." Lastly, applicant argues there is no requirement for providing *in vivo* data to establish enablement of the claimed invention.

In response to applicant's assertion that *in vivo* data is not required. Applicant's argument is partly correct because "[t]he specification need not contain an example *if the inventions is otherwise disclosed in such a manner that one skilled in the art will be able to practice it without an undue amount of experimentation*....Lack of a working example, however is a factor to be considered, especially in a case involving an unpredictable and undeveloped art." See MPEP 2164.02 [emphasis added]. Therefore, in view of the unpredictability in the art of antisense and RNAi-based therapy, as outlined above, one skilled in the art would not be able to practice the claimed invention without undue experimentation and further because of the unpredictability, lack of a working example of the claimed process *in vivo* must be taken into consideration.

In response to applicant's arguments that in vitro date correlates to in vivo data, "the issue of "correlation" is also dependent on the state of the prior art. In other works, if the art is such that a particular model is recognized as correlating to a specific condition, the it should be accepted as correlating unless the examiner has evidence that the model does not correlate." See MPEP 2164.02. As stated above, given the unpredictability of delivery of nucleic acids; one of skill in the art cannot predict *in vivo* delivery and inhibition of expression of a target gene based on *in vitro* experiments.

Lastly, in response to applicant's assertion that an established utility *in vitro* satisfies the enablement requirement, MPEP 2167.07 states even "If an applicant has disclosed a specific and substantial utility for an invention and provided a credible basis supporting that utility, that fact alone does not provide a basis for concluding that the claims comply with all the requirements of 35 U.S.C. 112, first paragraph. For example, if an applicant has claimed a process of treating a certain disease condition with a certain compound and provided a credible basis for asserting that the compound is useful in that regard, but to actually practice the invention as claimed by a person skilled in the relevant art would have to engage in an undue amount of experimentation, the claim may be defective under 35 U.S.C 112." Thus, despite the asserted utility, one of skill in the art would have to practice a substantial amount of trial and error experimentation, an amount considered undue and not routine, to practice the instantly claimed invention and therefore the instant claims are not enabled.

New Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heifetz et al. (WO 99/61631 cited on Form PTO-1449 filed 08/26/2002), Fire et al. (US

Patent No. 6,506,559), Kreutzer et al. (WO 00/44895) and Lundstrom K. (cited on Form PTO-892 filed 09/7/05).

The instant claims are drawn to a process for inhibiting expression of a target gene in mammalian cells or tissues comprising infecting said cells or tissue with a first set of viral particles expressing a sense RNA strand and a second set of viral particles expressing an antisense RNA strand, wherein the cells or tissue are infected with equal amounts of viral particles, wherein the sense and antisense RNA strands comprise homologous nucleotide sequences to a portion of said target gene, wherein the virus is an alphavirus, wherein the target gene is eukaryotic, viral or synthetic and the homologous nucleotide sequence is at least 50 bases in length and is specific for a target gene.

Heifetz et al. teach production of a double stranded interfering RNA comprising introducing into plant cells DNA sequences encoding a sense RNA strand and an antisense RNA strand into an expression vector wherein the sense and antisense RNA strands are complementary to each other and form a double stranded RNA (see page 8). Heifetz et al. teach the complementary regions can be 15, 50 or 500 nucleotides in length (see page 11). Heifetz et al. teach the DNA sequences are preferably operably linked to one or more promoters wherein the promoter is a heterologous promoter (see page 10 last paragraph to the top of page 11). Heifetz et al. teach the DNA sequences that encode a sense strand or an antisense strand are in separate vectors (see pages 8-9). Heifetz et al. teach viral vectors can be used to introduce the DNA molecules into the plant cells (see page 11) and further teach methods of altering the expression of a

target gene by introducing a vector comprising said DNA sequences as stated above (see pages 12-13 and Examples 1 and 3).

Fire et al. teach double stranded RNA wherein the duplex regions of the RNA are capable of hybridizing with the target gene wherein the length of the duplex regions are from 25 to 400 bases (see columns 7-8). Fire et al. teach the target gene may be derived from any cell of any organism wherein the organism may be a virus, a plant, animal or human (see column 8, lines 12-20) and teach methods of introducing the dsRNA into cells comprising contacting cells with a viral particle wherein a viral construct expresses said dsRNA (see column 9, lines 49-55).

Kreutzer et al. teach a method if inhibiting expression of a target gene in mammalian murine cells wherein the dsRNA or vector expressing said dsRNA can be enclosed in a viral particle (see page 3, lines 31-36). Kreutzer et al. teach the dsRNA has from 10 to 1000 base pairs (see page 4, lines 1-5).

It would have been obvious to one of skill in the art to incorporate separately an antisense RNA strand and a sense RNA strand into viral particles for delivery of a dsRNA to inhibit expression of a target gene.

One of skill in the art would have been motivated to use viral particles as taught by Fire et al. and Kreutzer et al. to deliver the antisense and sense strands taught by Kreutzer et al. because Fire et al. teach viral particles delivering nucleic acids is an efficient way to introduce the RNA into the cells. Similarly, Kreutzer et al. teach it is advantageous to delivery dsRNA or vectors encoding dsRNA using viral particles. One of skill would have had a reasonable expectation of success given that Heifetz et al.

teach efficient expression of a sense and antisense vector from different constructs and Fire et al. and Kreutzer et al. teach the use of viral particles to delivery RNA is an efficient method of delivery to cells.

Heifetz et al. does not specifically teach infection of cells with equal amounts of an antisense or sense RNA fragments or equal amounts a viral particle consisting of a RNA sense fragment or antisense RNA fragments and an alphavirus vector. Heifetz et al. teach treating plant cells with a sense RNA and an antisense RNA strand for the purposes of generating dsRNA molecules for interference of expression of a target gene and teach delivery of these sense and antisense RNA strands sequentially to cells wherein the sense and antisense strands form dsRNA, therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use equal amounts of sense and antisense RNA strands and infect cells with equal volumes of viral particles comprising sense and antisense RNA strands for the purposes of forming a dsRNA molecule. One of skill in the art would have motivated to use equal volumes of a viral particle comprising a sense RNA and a viral particle comprising an antisense RNA to allow efficient formation of dsRNA molecules for the purposes of interfering with gene expression.

Neither Heifetz et al., Fire et al. or Kreutzer et al. the viral particles is made from an alphaviral vector.

Lundstrom teach alphavirus vectors, such as Semliki Forest Virus vectors, for production of high titer viral particles comprising nucleic acid sequences for delivery to cells (see page 680).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use an alphavirus vector, as taught by Lundstrom, to deliver the sense and antisense RNA fragment to plant cells, as taught by Heifetz et al. because Lundstrom teach production of viral particles from alphavirus vectors allow direct non-viral transfection of cell lines that results in higher fold expression levels compared to DNA vectors.

One would have been motivated to use alphaviral particles for delivery of sense and antisense RNA strands because Lundstrom specifically teach alphaviral particles are known for their extremely broad host range and therefore capable of infecting numerous cell types (see page 680 and Table 1). Lundstrom teach RNA molecules are in vitro transcribed from the plasmid vectors (see Figure 1) and alphaviral vectors are easy to produce and have the ability to produce high titer viral particles that make them favorable for gene therapy applications (see page 680).

Finally, one would have a reasonable expectation of success because Lundstrom teach generation of alphavirus vectors, efficient production of high titer alphavirus particles and use in gene transfer into cells. Further Lundstrom teach an efficient high titer alphavirus viral particle packaging system.

Thus in the absence of evidence to the contrary, the invention as a whole would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made.

The foregoing represents a new rejection necessitated by the claim amendments filed 01/16/2007, however parts of applicant's arguments in the response filed 01/16/2007 that are considered relevant will be addressed.

Applicant states that the examples of the present applicants surprisingly demonstrate that when the sense and antisense fragments are provided by different viral particles there is an inhibition of gene expression and "evidence of such surprising and unexpected results rebuts a prima facie case of obviousness." Applicants further argue that Heifetz et al. teach "the RNA fragments are mixed before being introduced into the cell or alternatively the RNA fragments are introduced sequentially" and does not teach introduction of the RNA fragments by viruses separately in order to obtain inhibition of expression.

Out the outset, it must be noted that the claims do not require the viruses be introduced into the cell separately. The claims are drawn to a process of inhibiting expression of a cell *comprising* infecting the cells with a first set and a second set of viral particles which, given its reasonable broadest interpretation, would mean the separate viral particles can be introduced together or mixed before being introduced to the cells. Additionally, Heifetz et al. does in fact teach introducing separately an antisense RNA fragment and then a sense RNA fragment by teaching the RNA fragments are introduced sequentially i.e. introducing one RNA fragment separately and then introducing the second RNA fragment. Thus, as stated above, the invention as a whole would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made

Response to Applicant's Arguments

Re: Claim Rejections - 35 USC § 103

The rejection of record of claims 1-6 under 35 U.S.C. 103(a) as being unpatentable over Heifetz (WO 99/61631 cited on Form PTO-1449 filed 08/26/2002) in view of Lundstrom K. (cited on Form PTO-892 filed 09/7/05) filed 09/09/2006 is obviated in response to claim amendments filed 01/16/2007.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimberly Chong whose telephone number is 571-272-3111. The examiner can normally be reached Monday thru Friday between 7-4 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Schultz can be reached at 571-272-0763. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public. For more information about the PAIR system, see http://pair-direct.uspto.gov.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

Kimberly Chong
Examiner
Art Unit 1635

SEAN McGARRY
PRIMARY EXAMINER
AU 1635